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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,152	02/13/2002	Andre Booyesen	14891	9186

7590 04/06/2004

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EXAMINER

SONG, HOON K

ART UNIT PAPER NUMBER

2882

DATE MAILED: 04/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/936,152		BOOYSEN ET AL.	
	Examiner		Art Unit	
	Hoon Song		2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6 and 8-14 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 6 and 13 are objected to because of the following informalities:

In claim 6 line 2, "the compensation" lacks proper antecedent basis.

In claim 13 line 4, there is a spelling error, "tine".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4-6 and 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karellas (US 6445767B1) in view of Hamamoto et al. (US 6479827B1).

Regarding claim 1, Karellas teaches an imaging apparatus comprising:

a radiation source (12) for generating an imaging beam;

a camera array (figure 26) comprising a plurality of cameras (904) responsive to the imaging beam and arranged adjacent one another, each camera comprising rows and columns of pixels and having an output for generating image signals;

drive means for moving the radiation source and the camera array relative to a subject (figure 8);

signal processor means arranged to receive image signals from the data output of each camera to process the image signals and to generate composite image data and to determine the imaging beam intensity therefrom (figure 14b);

memory means for storing the composite image data;

output means for displaying an image generated from the composite image data (figure 14b);
and

control means responsive to the image signals and/or the composite image data to control the operation of the signal processor means according to the intensity of the imaging beam;

the camera array arranged so that fields of coverage of adjacent cameras in a direction transverse to the direction of movement of the camera array, so that the camera array provides full coverage of an elongated imaging zone defined thereby.

however Karellas fails to teach that the adjacent cameras are overlapped.

Hamamoto teaches a detector arrangement having plurality of detector modules with overlap each other (figure 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide an imaging system of Karellas with the overlapping detectors as taught by Hamamoto, since the detector arrangement of Hamamoto would take an images of wider object using a plurality of detector modules without losing imaging signal from a gap between them. Accordingly, one would be motivated to adapt the detector arrangement in order to improve x-ray images.

Regarding claim 2, Karellas teaches that the radiation source is an x-ray source and the cameras comprise scintillators and associated charge-coupled devices for generating digital image data signals (figure 26).

Regarding claim 4, Karellas as modified by Hamamoto teaches each camera has an active area with a parallelogram shape, with adjacent ends of the respective active areas abutting, so that the coverage of adjacent cameras overlaps in a relatively narrow transition zone extending transversely to the direction of scanning.

Regarding claims 5 and 6, Karellas teaches that the signal processor means comprises a digital signal processor arranged to apply a signal processor means comprises a digital signal processor arranged to apply a compensation algorithm to the data signals to compensate for distortion of the cameras (column 17 line 27+).

Regarding claim 9, Karellas teaches that the control means is arranged to carry out intensity compensation by means of software correction of the image data signals using measured information regarding intensity fluctuations in the imaging beam (column 17 line 27+).

Regarding claim 12, Karellas teaches that each camera defines a plurality of imaging pixels, the outputs of at least some of the pixels being combined according to a predetermined scheme to improve the signal-to-noise ratio of the image signals (column 7 line 36+).

Regarding claim 13, Karellas teaches that the cameras are adapted to combine the outputs of pixels which are adjacent in the direction of movement of the radiation source and the camera array at the time of generation of the image signals.

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Regarding claim 14, Karellas teaches that the signal processor means is adapted to process the image signals to combine the outputs of pixels which are adjacent in a direction transverse to the direction of movement of the radiation source and the camera array.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Karellas as modified by Hamamoto as applied to claim 1 above, and further in view of Kemner et al. (US 4051377).

Regarding claim 8, Karellas as modified by Hamamoto fails to teach that the control means is arranged to measure variations in the intensity of the imaging beam, and variations in the speed of the drive means, and to correct the image signals and/or composite image data accordingly.

Kemner teaches a control system measures variations in the intensity of the imaging beam, and variations in the speed of the drive means, and to correct the image signals and/or composite image data accordingly (column 3 line 66+).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide x-ray system of Karellas as modified by Hamamoto with the control system as taught by Kemner, since the control system of Kemner would provide better images by optimizing the adverse influence of the system.

Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karellas as modified by Hamamoto as applied to claim 1 above, and further in view of Cabral et al. (US 6217214B1).

Regarding claim 10-11, Karellas as modified by Hamamoto fails to teach that the drive means has an encoder associated therewith for generating clock signals related to the movement of the radiation source and the camera array and imaging operation.

Cabral teaches an encoder with clock signal.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the x-ray system of Karellas as modified by Hamamoto with the encoder with clock signal as taught by Cabral, because it is important for monitoring and ultimately controlling the motion control systems of scanner apparatus (column 20 line 65+). Accordingly, one would be motivated to adapt the encoder with clock signal in order to more accurately synchronize the moving means and the imaging operation.

Allowable Subject Matter

Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: none of the prior art teaches or suggests a imaging system having a compensation algorithm to compensate for errors in the positioning of pixels in the direction of the y-axis, and then in the direction of the x-axis to compensate for unexposed and overlapping pixels in the transition zones between the cameras as claimed in dependent claim 7.

Response to Arguments

Applicant's arguments with respect to claims 1-2 and 4-14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

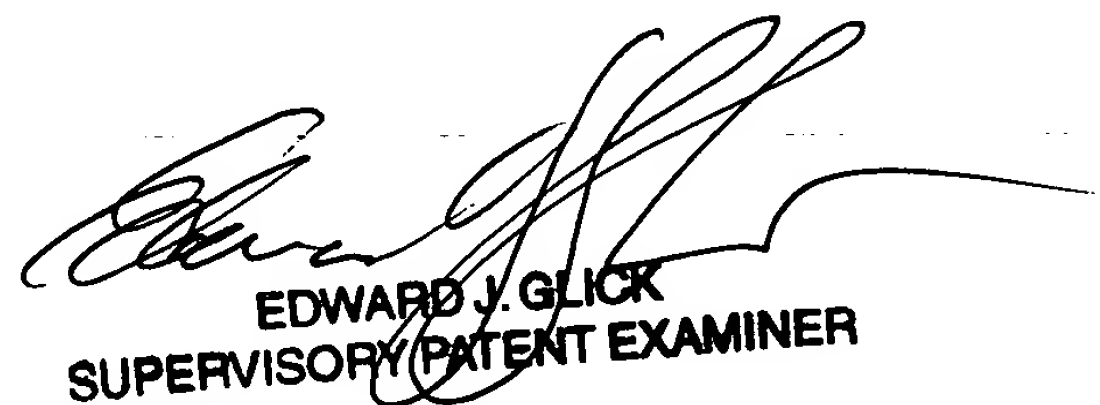
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is (571) 272-2494. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272 - 2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HKS

4/3/04



EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER